ON THE VICTORIAN SPECIES OF TUBERCULATED *DIPLODACTYLUS*

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The tuberculated geckos of the genus *Diplodactylus* have been the subject of some disagreement between herpetologists. Originally four species were described.

1839. *Phyllodactylus strophurus* Dumeril and Bibron, Erp. Gen., vol. 3, p. 397.
1842. *Diplodactylus spinigerus* Gray, Zool. Miscel., p. 53.
1885. *Diplodactylus ciliaris* Boulenger, Cat. Liz. Brit. Mus., vol. 1, p. 98.
1892. *Diplodactylus intermedius* Ogilby, Rec. Aust. Mus., vol. 2, p. 10.

In the British Museum Catalogue (1885), Boulenger assigned the three species then known to geographical regions, namely:

ciliaris — North Australia
spinigerus — West and North Australia
strophurus — South-east Australia.

Ogilby later described *intermedius* and localized it to "the interior of New South Wales."

Zietz (2), in 1920, admitted only one species, placing the other three names in its synonomy. In selecting *spinigerus* as the valid name he ignored the fact that *strophurus* was described earlier, and its name should therefore have been used.

Kinghorn (3), in 1929, resurrected *strophurus* from synonomy and reinstated it as a full species. He agreed to leave *ciliaris* and *intermedius* as synonomys of *spinigerus,* but suggested that they might be "geographical varieties or races." He suggested that Boulenger's record from Sydney is a mistake, "for it appears to be restricted to locations in the vicinity of the Murrumbidgee River and particularly south-western New South Wales."

Loveridge (4), in 1934, agreed with Kinghorn regarding *ciliaris,* which he made a subspecies of *spinigerus.*

In the National Museum collections are 31 specimens of tuberculated *Diplodactylus* from localities within Victoria, and 38 specimens from Central and Northern Australia. Any later mention of the Victorian or North Australian series in this paper refers to these specimens.

During the preparation of a list of Victorian reptiles for future publication, the present writer was confronted with the problem of the correct designation of the Victorian member of this group of geckos. No Victorian specimen possessed spines, so that

strophurus seemed to be indicated. However, both Kinghorn and Ogilby deny the presence of tubercules on the tail of *strophurus,* whereas the tails of Victorian specimens are ornamented with rows of tubercules. A perusal of the original descriptions of the four species was obviously desirable, but unfortunately it reveals a confused situation from which it is difficult to escape.

It seems best to set out this situation as follows:

1. Type Localities

strophurus

Dumeril and Bibron say, at the end of their type description, "Ce Phyllodactyle est une espèce Australasienne, que MM. Quoy et Gaimard ont trouvée à la baie des Chiens marins, à la Nouvelle-Hollande." The Bay of Chinese Sailors is near the mouth of the Wooramel River, in the inner part of what is now Shark's Bay, Western Australia. Without doubt the specimen was collected during the voyage of the corvettes L'Uranie and Physicienne, for which Quoy and Gaimard were first and second surgeons respectively. The landing is noted by Freycinet in the "Historique" (1).

Boulenger's relegation of this species to the diametrically opposite end of Australia, and his restriction of it to that eastern part, is difficult to understand unless he confused the above voyage with that of a later one made by Quoy and Gaimard on the "Astrolabe". The latter vessel did not touch the western coast of West Australia, but did spend a considerable time on the southern and eastern coasts of the continent.

Kinghorn perpetuated this apparent error when he still further restricted the specific range.

spinigerus

The earliest description of *spinigerus* is in Gray's "Zoological Miscellany" (1842), in which he gives the type locality as Van Diemen's Land. This is the old name for Tasmania, but other than this assumption by Gray, and one other doubtful record of an example of another genus (*Hoplodactylus*), geckos are unknown on this island. However, in his 1845 Catalogue of Lizards, he places *strophurus* D. and B. in the synonomy of *spinigerus* and gives the locality as Houtman's Abrollos. This is apparently correct, for Boulenger in the 1885 Brit. Mus. Catalogue notes the type as from this island group.

ciliaris

The type came from "Darwin, Northern Territory."

intermedius

Type from "Interior of New South Wales."

2. Dimensions

strophurus

Measurements of the type are given as follows:

Longueur totale	9″	1‴	Corps. Long.	2″	3‴
Tete. Long.	1″	2‴	Queue. Long.	2″	6‴
Cou. Long.		3‴			

It will be seen that when the length of the parts are added together the result is 27 mm. short of the given total length of 91 mm. If the error lies in the total measurement, then the specimen must have been but half-grown, and that this is so is suggested by the approximately correct ratio of the separate parts.

spinigerus

No dimensions are given for the type.

ciliaris

Total length 125 mm, head 22 mm., body 56 mm., tail 47 mm.

intermedius

Total length 100 mm., head 16 mm., body 47 mm., tail 37 mm.

The proportional length of snout to diameter of eye has been used as a diagnostic character by several authors:

strophurus. Kinghorn says "the head is shorter and deeper than that of *spinigerus.*" He gives no measurements, nor does Boulenger in the Cat. Liz.

spinigerus. Ogilby says when describing *intermedius*, "in *spinigerus* the snout is only a little longer than the diameter of the eye."

ciliaris. Boulenger says of the type, "snout rounded, longer than the distance between the eye and the ear opening, and than the orbit."

intermedius. The type description says, "Snout rounded, much longer than the eye and the ear opening, from once-and-three-fourths to twice the diameter of the eye."

It would appear from the above that there should be a progressive lengthening from the short-snouted *strophurus,* through *spinigerus* and *ciliaris* to *intermedius.* It should be remembered, however, that the comparisons were made, not from the original specimens, but from subsequent designations.

Variation in proportional snout length was checked by measuring the museum series (for accuracy this was done under a low-power microscope carrying a micrometer eyepiece, so that positive comparison could be obtained). The following figures were computed:

For 20 fully-grown specimens of the Victorian series,

snout length = $1{\cdot}93 \pm {}^{\cdot 42}_{\cdot 40}$ times diameter of eye.

For 20 fully-grown spiny specimens of the N. Australian series,

snout length = $1{\cdot}97 \pm {}^{\cdot 17}_{\cdot 21}$ times diameter of eye.

Thus the average of the Victorian series is very slightly less than that of the N. Australian series, but the variation is wider and its limits overlap those of the N. Australian series as well as the proportions quoted by Ogilby for *intermedius*.

3. Labials

Labial counts for the species are set out under authors.

strophurus				
Dumeril and Bibron	upper	12	lower	12
Boulenger	„	10-12	„	10-12
spinigerus				
Gray	„	—	„	—
Ogilby	„	13-15	„	13-15
Boulenger	„	13-15	„	13-15
ciliaris				
Boulenger	„	12	„	12
intermedius				
Ogilby	„	11-13	„	11-13
Victorian				
Museum series	upper	$12{\cdot}6 \pm {}^{1{\cdot}4}_{1{\cdot}6}$	lower	$11{\cdot}9 \pm {}^{2{\cdot}1}_{\cdot 9}$
N. Australian				
Museum series	„	$12{\cdot}1 \pm {}^{1{\cdot}9}_{1{\cdot}1}$	„	$11{\cdot}8 \pm {}^{2{\cdot}4}_{\cdot 8}$

4. Body Tubercules

strophurus

Dumeril and Bibron say of the body scales: "Celles du dessus et des côtés du corps sont plates, clairsémees de petits tubercules peu élevés, ou bien d'écailles circulaires d'un diamètre trois fois

plus grand que celui des autres." No pattern is suggested for the "thinly-sown" tubercules.

Kinghorn says "there are large and small tubercules scattered over the dorsal area but nothing to resemble spines."

spinigerus

The type description says "scales small, granular, with a series of black spines along each side of the back and tail."

Ogilby says "In *spinigerus* the tubercules are irregularly scattered over the dorsal surface."

ciliaris

Type description says "Upper surface covered with rather large granules intermixed on the back with enlarged conical tubercules forming two irregular, longitudinal series."

intermedius

Type description says "the dorsal tubercules form two regular longitudinal series."

Victorian. Museum series

No specimen has spines. In no specimen can the tubercules be called "scattered"; there is some irregularity and broken continuity, but no tubercules are found in the mid-dorsal area.

N. Australian. Museum series

Two specimens only have truly scattered tubercules. Five specimens have a few tubercules in the mid-dorsal area between two obvious lines; the remainder have tubercules or pointed spines in two more or less regular lines.

5. Tail Tubercules

strophurus

The original description says: "Sur le dessus de la queue, ou voit successivement, depuis sa racine jusqu'aux deux tiers de sa longueur, deux rangs transversaux de tubercules, et deux rangs de tres petit grains squammeux; mais a partir de cet endroit les rangs de grains augmentent de plus en plus jusqu'à la pointe caudale."

This I translate to mean: "On the upper side of the tail one sees in succession, from its root up to two-thirds of its length, two transverse rows of tubercules and two rows of very small granular scales; but from this point onwards the rows of small scales increase more and more towards the tip."

Kinghorn in resurrecting the species says: "The tail of the Leeton specimen is long and thin and without tubercules; in the two from Hillston, in which the tail is rejuvenated, the new part is very short and thin, suggesting to me that the originals were like the Leeton specimen."

Ogilby, in describing *intermedius,* says "From *strophurus* it (*intermedius*) is equally distinguished by the presence of tubercules on the tail."

spinigerus

Type description says "scales small, granular, with a series of black spines along each side of the back and tail, and a group of spines at the base of the latter."

ciliaris

Type description says "Tail short, cyclo-tetragonal, prehensile (?), covered with granular scales; on each side of its upper surface a series of long, curved spines."

intermedius

Ogilby says of the type tail, "short, sub-cylindrical, covered with small granules; seventeen more or less regular transverse bands of strong tubercules."

Victorian. Museum series

It has been mentioned earlier that no Victorian specimen has spines on the tail. All possessing their original tail have blunt, sub-conical tubercules which are arranged in from fifteen to seventeen transverse rows. The composition of the rows differs from that described for *strophurus* by Dumeril and Bibron in that the large tubercules are in single rows, and are separated from one another by four or five rows of granules.

N. Australian. Museum series

The original tail is preserved in less than half of the specimens of this series. Transverse rows of tubercules are not present on the tail of any specimen. On the mid-dorsal area of the tail of two specimens, a few enlarged scales, which bear little or no relation to raised, sub-conical tubercules, are scattered. In the remainder of the series the mid-dorsal area is clothed with small granular scales only.

6. Comment

From the confusion of quotations and comparisons noted above, several facts emerge which have not previously been stressed, but

which must be taken into account when considering the taxonomy of this group of geckos.

Regarding the group as a whole, the writer feels that a larger and more geographically comprehensive collection than is available to him is necessary before the situation can be satisfactorily clarified. Individual variability, added to the distortion so often a part of alcoholic specimens, makes measurement, direct or comparative, an impracticable basis for species diagnosis. Scalation, also, is very variable, but amongst the series examined there does seem to be a disjunction. The demarcation is between forms in which the tail is clothed with a succession of transverse rows of tubercules and granular scales, and those in which the tail is provided with two longitudinal lines of spines, between which there are no tubercules and therefore no transverse bars. However, whether or not the non-spiny forms should be separated, specifically, from the *spinigerus–ciliaris* group is not of consequence to the present question, for in any case *strophurus* would be the prior and valid name.

Two facts may be stressed. Firstly, the true *strophurus* is topotypically a western species and should not be confined, as by some authors, to south-eastern Australia. Secondly, the tail of this species originally was described as having successive, transverse rows of tubercles and granular scales, and is thus closely allied to the specimen later described by Ogilby as *intermedius.*

Victorian specimens are obviously within the *strophurus* group but, apart from their geographical remoteness from the type locality, they also disagree in some minor characters such as the scalation of the dorsal area and the constitution of the transverse scale rows on the tail. So, also, does Ogilby's *intermedius,* with which the Victorian specimens closely agree. Normal variation suggests that such differences are not sufficiently great to separate the forms into species, and the position may therefore be set out as follows:

Diplodactylus strophurus strophurus D. and B.

1839. *Phyllodactylus strophurus* Dumeril and Bibron, Erp. Gen., vol. 3, p. 397, baie des Chiens marins, W. Aust. (Quoy and Gaimard).

Range, Western Australia.

Diplodactylus strophurus intermedius Ogilby

1892. *Diplodactylus intermedius* Ogilby, Rec. Aust. Mus., vol. 2, p. 10, interior of New South Wales.

Represented in the National Museum collections by 31 specimens from North-Western Victoria and 4 specimens from Purnong, South Australia.

Range, Western New South Wales, N. W. Victoria, E. South Australia.

References

1. 1827 Freycinet, L., Voy. Autour du Monde, Historique, vol. 1, pp. 470-86.
2. 1920 Zietz, F. R., Rec. Sth. Aust. Mus., vol. 1, p. 185.
3. 1929 Kinghorn, J. R., Rec. Aust. Mus., vol. 17, p. 81.
4. 1934 Loveridge, A., Bull. Mus. Comp. Zoo. Harvard, vol. 77. No. 6, p. 303.

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